APOLLO STATICUS.

OR, THE

ART

OF CURING

FEVERS

BY THE

STATICKS

Invented by

Dr. PITCAIRN

AND

Publish'd by him in *Latine*:

NOW

Made *English* by a Well-wisher to the MATHEMATICKS.

Capiat qui capere potest.

EDINBURGH,
Printed by *J. W.* and Sold at *James Wardlaw*'s Shop, opposite to the *Locken-buiths*. 1695. Price 4 ß.

one Skiled physician Licke a Sculler plyes
and all his Arte & all his Skill he tryes
But two physicians are a pare of Oares
they wafl you sooner to the Stigian Shoares

The PREFACE.

YOU *have here a freſh Inſtance of the Power of the* Mathematicks, *and of the* Uſefulneſs of Geometry in Medicine. *It is the Deciſion of a grand Controverſy about* Purging in Fevers, *that many have quibbled at in vain.* At laſt Dr. *Pitcairn* applied his Mathematicks to the Queſtion, and has ſolved it by a Method not to be imitate: *As he tells us himſelf in his Learned and Eloquent Anſwer to* Apol: Mathem: *Pag.* 5. *It was writ originally in a dead Language, and is now Tranſlated into a living, for the benefit of all thoſe who underſtand not* Latine, *and have no mind either to be ſcortched, or reduced to Aſhes, by the fatal Flames of a burning Fever. The Verſion is almoſt literal, it being dangerous in a Thing of this conſequence, wherein the Life of Man is ſo nearly concerned, to miſtake the Senſe of the Author, or deviat ſo much as an hair-breadth from the Original. Wherefore I hope none will be offended with the harſhneſs of the Stile, which can never be evited*

in a literal Translation. Besides, it were an Injury done to the learned Author, to put barbarous Latine *into good* English. *But if any thing be amiss as to the Sense, he is to blame for it himself: For a Copy was sent to him by the Translator, and was returned without any Amendments.*

I will not Commend this Piece too highly; but this I may say, that any one who reads it attentively, will find it one continued Mistake from the Beginning to the End: And that never any one Man bewrayed more Ignorance and Inadvertency in so few Lines. I confess the Author has done Wonders in his Inaugural Oration, *and far out-done all that ever wrote Nonsense before him: But here he has even out-done himself. That may be called an Original, but This a Master-piece, that can no more be imitate than* Homer's Iliads. *It would make any Body blush to see how he stumbles on the very Threshold, and mistakes the Foundation and Ground-work of the Fabrick he is to raise. For instead of giving us out of* Sanctorius *the* Sensible *and* Insensible Evacuations, *in the same space of time, he gives us the* Sensible Evacuation

of

of a Night's time, and the Insensible *of a natural Day, which is* 24 *Hours: (as is evident by the* Aphorisms *cited by himself) and so has lost* 16 *Ounces of his Account: Which is clear from the* 6 Aphor. Sect. 1. *But allowing him to have stated the Account right, yet he has cast it up wrong. For he tells us, that* Perspiration *is the double of the* Sensible Evacuation (*which he makes* 50) *that is to say, twice* 20 *makes* 50. *And so on.*

Having now determined, as he fancies, the difference between Sensible *and* Insensible Evacuations, *he proceeds to open up this Mystery, which lay hid from the Ages past. And from this, that* Perspiration *is the double or triple of the other* Evacuations (*tho it be neither according to the* 6 Aphor. Sect. 1. *above cited) and* 10 *times as much as Stool, he very Dogmatically, or rather Mathematically concludes, that the suppression of the* 3*d. part of the perspirable Serosity will occasion as great a Fever, as the suppression of all the other* Evacuations *together: And that the suppression of the* 10 *part of* Perspiration *will do as much hurt, as the suppression of the whole Excretion by the Belly. And for the same rea-*

son

ſon that the promoving the 3 *part of* Perſpiration *ſuppreſt, will be as effectual in Curing a Diſeaſe, as the promoving all the other* Evacuations *ſuppreſt; and the procuring the* 10 *part of the ſame, as good as the whole Excretion by Stool. Then after all learnedly concludes, that Fevers and other Diſeaſes will be* 10 *times more probably Cured by* Sweat *than* Stool. *Which is ſuch an abſurd Notion and extravagant Fancy, and ſo contrary to the natural Oeconomie, that I wonder it ever enter'd into any Man's Head but in a Dream. For beſides its native Abſurdity, it down-right contradicts the Premiſſes, and concludes the quite contrary of what he propoſes. For he propoſes to us the Cure of Fevers by procuring* Perſpiration, *and then tells us this is to be done by* Sweating, *which is no* Perſpiration *at all. Why not good Dr. as well by* Urine *or* Stool, *which differ no more from* Perſpiration *than* Sweat *does according to* Sanct. *But which is more, who tells us expreſly* Aph. 3 § 5. That Sweat alwiſe hinders Perſpiration. *Muſt we then advance* Perſpiration *by that which hinders it? No doubt, and the Argument runs thus: The beſt and readieſt way to Cure Fevers is by* Perſpira-

ration. *And the beſt way to promove* Perſpiration *is by* Sweating, *which hinders it and does not promove it at all.* Erg. *the beſt and readieſt way to Cure Fevers is by that which does not Cure them at all: that is, the beſt way of Curing Fevers is not to Cure them at all,* q.e.d. *It follows alſo from the ſame Principles, that if Fevers are to be Cured, the worſt way to Cure them is by* Sweat. *For according to the Dr. the moſt probable and ready way to Cure them, is by promoving theſe Secretions that are naturally the greateſt; and ſo far as one natural Secretion exceeds another, ſo much the more probable it is, that the Fever will be Cured by the one rather than the other; and therefore* Perſpiration *being* 10 *times more than* Stool *a Fever will be* 10 *times more probably Cured by That than This. And ſince* Urine *is* 4 *times more than* Stool, *a Fever will be* 4 *times more probably Cured by* Urine *than* Stool. *And ſince* Evacuation *by* Stool *is indefinitly greater than* Evacuation *by* Sweat (*for ſome Men ſcarce ever ſweat in Health, and others very litle*) *but I ſhall ſuppoſe it only a* 1000 *times greater. Then it follows, according to the Profeſſor's Doctrine, that a Fever will be a* 1000 *times*

times more probably Cured by Stool *than* Sweating: *And that the worst way to Cure Fevers is by* Sweating. *q. e. d. The Professor's Practice likeways contradicts his Doctrine here. For he tells us* Parag. 11. *that a Disease will be sooner carried off by augmenting* Insensible Perspiration, *than any other Secretion: And in the mean time he pretends to Cure* Scurvies, Dropsies, Rheumatisms, &c. *by augmenting Salivation or Spitting, which is a* sensible Evacuation, *and which naturally is very little in sober Men, in respect of* insensible Perspiration, *and so flatly contradicts himself. q. e. d.*

More might be said to demonstrate the vanity of this Man's Pretensions, and the absurdity of this following Discourse: But the reading of it will supply that, and prove the best Refutation of all. But by what is here said, any Body may see the vast difference that is between one that takes his Observations from Nature, and one that takes his Marks by the Moon, that is, between a Rational and Mathematical Physician. Ch: Olaphant

——————Pudet hæc opprobria vobis,
Et dici potuisse & non potuisse refelli,

A Great B—t AR-
ton Olaphant

ARCHIBALD PITCAIRN's

DISSERTATION

Of the CURE of

FEVERS

BY

EVACUATIONS

Read before the *Colledge of Physicians* of *Edinburgh*, the First Day of *November*, 1694.

PHYSICIANS think Continual Fevers arise from the Fault of some Liquor or Body, stirring up *Phænomena;* which all knows are proper to Fevers; to which Body or Liquor, they attribute the Name of *Morbifick Matter.* Some will have this Matter to be an Humor that's usually excern'd by these in Health, but so changed in sick Persons, that it both begets the Symptoms of Fe-

vers, and of its own accord, that is, by the natural Force of the Blood cannot be expell'd: Others think it comes from without, calling it a *Miasma*; and being join'd to the Liquor that's naturally to be secern'd, that it kindles a Fever. It's not much matter which of them be trueſt, becauſe they come both to one, whether the Matter morbifick comes from without, or whether the Humor within be chang'd to the morbifick Matter.

II. Phyſicians fell into theſe Opinions, after they obſerved Fevers to come upon the ſuppreſt Tranſpiration of the Skin, or any other Evacuation, to which the Animal was us'd, being ſtop'd or diminiſhed. But the Thing ſeem'd very manifeſt to theſe who obſerved what way Fevers ended. Some they ſaw end by Sweat, Others by copious Urine, Some by Flux of the Belly, and a Criſe to come by a Secretion, provocked throw any Glands, conveighing the Humor out of the Animal: Wherefore they were perſwaded, that it was ſome morbifick Matter nurſed the Diſeaſe, which ought to be expell'd

out

out of the Body, after they had brought it into that fluidity, or ſo changed it (which they call the procuring of Concoction and Digeſting) that it might be caſt out of the Body.

We do not debate of that Concoction ſo much celebrate; but only enquire, What Evacuation or Secretion is to be choſen in curing Fevers, if perhaps any be to be choſen? In this Search we ſhall be ſilent of the Cure by Blooding, becauſe we purpoſe only to inſpect theſe Evacuations that fall out by ways naturally open in the healthy Animal, and which Phyſicians aim at after Blooding, when they judge it fit to be done.

III. But becauſe there is an Opinion of Writers, now Famous, that Fevers ariſe by the Fault of the Ferments proper to every part, or by the Fault of the fermenting Parts of the Blood: And this Opinion pleaſes Fopps, becauſe it makes them Philoſophers, and Phyſicians furniſhed with a ſtock of Three Words: I'le propoſe this Thing in the Words of the ingenious *Nicolas Steno* out of the *Prodromus* of his Diſ-

ſertation of a Solid naturally contain'd within a Solid. His Words are. " Beſide " the ſubtile Fluid penetrating all things, " at leaſt we obſerve three kinds of Fluids " in Animals: The *Firſt* is External, the " *Second* Internal and Common, the *Third* " Internal and proper to each Part. By the Word *External Fluid*, I underſtand not only that in Animals which incompaſſeth the outward, like the Atmoſphere, but alſo that which touches the reſt of the Superfices of the Body, that are continuous by the greater Paſſages with the foreſaid Superfice, ſuch as the Superfice of the *Aſpera Arteria*, and the Superfice of the way of the Aliment, *&c.* Therefore he ſays, " I call that the Inward Fluid, which does not communicat with the External Fluids, but by the intermediat ſmall Holes of the capillary Veſſels. The External Common Fluid is that which is contain'd in the Veins and Arteries in the lymphatick Veſſels, and it may be in the Nerves. The Internal Proper Fluid is that which incompaſſeth the capillary Veſſels of the Common Fluid, and is divers, according to

to the Places. Then he adds, that the Reaſon why in divers places from the ſame Blood, divers things are excerned, depends upon the Places, whoſe conſideration, he ſays, is abſolved by theſe Three.

1*ſt*. By the conſideration of the capillary Veſſels of the internal common Fluid, in which they are only taken up, who aſcribe all to Cribration throw divers Pores, of which number I was once one.

2*dly*, By the conſideration of the proper internal Fluid, about which only are converſant, theſe who attribute to every Part a particular Ferment; whoſe Opinion partly may be true, although the Name of Ferment go upon a Compariſon taken from a thing too peculiar.

3*dly*, By conſideration of the Solid of every particular part, to which they ſeem chiefly to adhere; who by attributing to every Part its form, ſhow that they acknowledge ſomething proper to the Part, but unknown to us, which according to that knowledge of Matter which we already have, can be nothing elſe but the porous Superfice of that Solid, and the

ſubtile Fluid going throw theſe Pores. He ſays, I ſhould go too far beyond the purpoſe, if I would apply theſe foregoing things to explain theſe things that befal daily our Bodies, and cannot be explain'd otherwiſe. It ſuffices here to have inſinuat, that from the external Fluid many ways Particles are ſeparate and carried into the internal common Fluid, by the mediation of Cribration; whence likewiſe they being ſecern'd ſeveral ways, and tranſmitted to the proper internal Fluids, by the new Cribration, they are applied to the ſolid Parts, either by the way of the Fibres or Parenchims, according as they are determin'd by the unknown property of every place, that is included in the conſideration of theſe Three preceeding Things.

IV. But we in a Diſſertation of the Circuite of the Blood throw the the ſmalleſt Veſſels, had and publiſh'd at *Leyden* the 1*ſt. January* 1693. Although we ſhew'd theſe Ferments not to be found in the Bodies of Animals; yet that we might accomodate it to their Capacities that does

not

not take up Demonſtrations, we are pleas'd to propoſe the whole Matter, ſo as it may be underſtood by new Beginners. From theſe Things that are deſcribed here in the Words of *Steno*, it may be asked, by what way, from the ſame Blood, ſo many divers Liquors are ſecern'd, why in the Liver Bile, and the Reins Urine, and other Things in the reſt of the Parts? The Ancients thought this was done by Attraction, whoſe Sentence to explain better than they could themſelves, it will be eaſy to him that underſtands *Newton*'s Writings. Some Phyſicians of late having exploded the word Attraction, have committed this Work to Ferments, which they conſtitute different in various Glandules, or in divers Colatories. But we ſhew'd that there are no Glandules which have different Pores, becauſe the Artery and the Vein, no Glandule interveening, are ſtretcht out into one and the ſame Veſſel, which *Autopſia* or Sight confirms. We ſhew'd alſo, that the Orifices of all the Veſſels are circular, and alike. Whence it follows, that there is no place for the *Firſt* and *Third* of *Steno*'s Con-

Conſiderations. But alſo it follows hence (that having laid aſide Attraction that thoſe Men reject, and which being admitted there had been no need of Ferments) by the defect of Glands, inſtructed with Pores of different figures, that the Ferments of thoſe proper internal Fluids, proper to every Part, behoved all to be waſh'd out of the Orifices, by the Force of the Blood going throw the Arteries. And if they ſtick any where, they will ſtick in every place, making no diſtinction of the places (for there is none) and therefore any Secretion will ſtill go out by every place, having no reſpect to Ferments. Becauſe if alike Ferments ſtick to alike Orifices, there will be no diverſity, nor no uſe of Ferments. But if you affirm, that in alike places, unlike Ferments are deriv'd from the Blood, and repair'd from its Maſs, the Queſtion comes back to the firſt, *viz.* How is it, that from the Blood in the Arteries of the Liver, that are like the Arteries of the Reins, is ſecern'd a Ferment, ſerving for the ſecerning of Bile? Or why the Particles that repair this Ferment,

ment, go rather into the Liver than to the Reins, eſpecially no Attraction interveening.

V. Neither is it only for the Reaſons here, and in the other Diſſertation manifeſt, that there is no divers Ferments peculiar to every Part; but that may be alſo known from the known Properties of the Blood. For what way ſhall any Part draw from the Blood a Ferment proper to its ſelf, and fit for no other Part? Or how ſhall it repair the Ferment diminiſhed or vitiat, or pluck from the gliding Fluid the Ferment that it has not in its Maſs? It's known to theſe learned in Chymy, that no Acid can be drawn from the Blood of Animals that can excite Fermentation, or Effervescence with the Alcaly in the Blood. And that no burning Spirit proceeds from Blood or parts of Animals, like that which comes from theſe things that ferment: Thereſore theſe Ferments cannot be brought from the Maſs of Blood nor repair'd, nor Fermentations be brought into the Blood at the nod of *Sylvies* or *Willis*, to excite Fevers.

VI. I oft wonder'd that ſo many ſuffered themſelves to be beguil'd, while they glory that the Natures of Things are made known to them. Many of the old Phyſicians aſſign'd Qualities, or a Temperament made up of Qualities, to every Part, by whoſe help the Actions and Secretions were govern'd: Our Authors of Ferments juſtly eſteemed the Qualities and Temperaments for the Refuge of Ignorance; becauſe without Foundation or any adjuvant *Phænomena*'s they were feigned; neither were they known to any but by their Name. They ſaid therefore, that there was a peculiar Ferment that did preſide over every Part and Secretion. But theſe Great Improvers of Medicine knew no more the Nature of theſe Ferments, than the Ancients knew the Nature of Temperaments; neither is the Nature of any Ferments proper to any place more known, to any of our Men, than the Nature of occult Qualities is known to the *Peripateticks*. Whence it is too clear from this Opinion, that nothing New is brought into Medicine, but a Word, or the uſe of

a Word, as I long ſince admoniſhed in that Diſſertation of the Circulation of the Blood throw the ſmalleſt Veſſels.

VII. Let us go to other things. We have written it to have been obſerved, that Fevers are terminated by the augmented cutanious Secretion, and ſometimes by the augmented Secretion throw the ſalival Glands, and oft-times alſo by a Secretion throw the renal Glands, or by a Flux ſuperveening throw the Glands of the Liver, Pancreas or Inteſtines. We need not ſpeak of other kinds of Criſis here, unleſs perhaps you would add to the reſt the Jaundice ſuperveening upon a Fever. Then we obſerve that there are no excretory Veſſels, and no Glands ſerving for Excretion in our Bodies (that is, Arteries terminating in excretory Veſſels) which cannot be augmented unto ſuch an amplitude, that they may be fit to receive and ſecern any Humor, that naturally is fit to be ſecern'd in other Glandules. Becauſe we obſerve in Jaundice, that that thick Liquor, which naturally is ſecern'd in the the Glands of the Liver, is ſecern'd in the

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cutaneous Glands, and that too much Secretion of Spittle by the ſalival Glands is reſtrain'd by provocking of Sweat, and that a Flux of the Belly is ſtopped by turning the Humor into the ways of Tranſpiration open'd by Sudorificks, and that Salivation binds the Belly; but the Flux of the Belly being ſtirr'd up again, that Salivation ſtops, which, as other Secretions, is ſtaid by a Flux of Urine.

VIII. In Fevers eſpecially it is to be obſerved, how oft any Liquor is carried throw any place, enlarged by the help of Art ot Nature; and how that there is no Fever but the like has been terminat by Secretion, throw the ſudorifick Glandules, oftner than by any other Secretion. So that there is no kind of febrifick Matter that cannot be brought throw the Glands alotted for Tranſpiration: And though either by the fault of ſome reſtrain'd Secretion, or the ſtopt motion of the Humor, or the fault of the Fluid, introduced by the chiliferous Veſſel, any part of the Blood, or any Humor may be chang'd into any Nature; yet this is not the Queſtion,

ſtion, but only, in what and how much condition of fault, while it excites Fevers, it uſes to be driven or perverted. In ſolving this Queſtion, Experiments are of uſe, by which it is ſhown that this is the Property of febrifick Matter, that it can and uſes to go out by all the Veſſels; but the thing will be more clear by the following, in the which we will ſearch, what reſpect the natural Secretions have, and what from that reſpect can be drawn, proper for the preſent Deſign. *viz.*

IX. From the Aphoriſms 3, 6, 21, 59 and 60. of the Firſt *Sect.* of *Sanct.* The Excretions in the given time keep this proportion for the moſt part.

By the Belly - - - - - 4
By the Bladder - - - 16
By Reſpiration - - - - 6
By the Skin - - - 60, 59, or 40.

Whence it is manifeſt, that Perſpiration is the double ſum of other Secretions (we take here the middle quantity of Perſpiration) and twelve times as much as the Belly's Excretion. But I admoniſh here, Excretion ſtirr'd up by the Mouth is accounted

counted for Perſpiration: For the little Bladders of the Lungs are no leſs expos'd to the Air than the ſuperfice of the Skin, neither Perſpiration naturally breaking forth out of the Veſicles of the Lungs can be hindered more than that which riſes from the ſuperfice of the *Skin*. Becauſe Perſpiration paſſes throw the Pores of the Veſſels expos'd to the Air. Therefore there is no ſudorifick Veſſels lengthned like Pipes (although we uſe that Appellation commonly) in the *Skin* more than in the Lungs, in which there are no ſudorifick Canals. If then, that I may return, that Excretion made by the Mouth be reckon'd with Perſpiration, the cutanious Excretion will be triple the ſum of the reſt, and 14 times as much as the Belly's: Wherefore Perſpiration will be with us at leaſt ten times as much as the *Secretion* of the Belly. For Perſpiration coming out of the Lungs is equal to the exceſs that any one would aſcribe to the *Padua* Perſpiration beyond the *Britiſh*.

X. Becauſe Fevers and many other Diſeaſes ariſe both from the cutanious *Secretion*

tion ſuppreſt, as well as from any other ſuppreſt, and that the cutanious is the double of all the reſt, or triple: Therefore the ſuppreſſion of the half, or third part, of the perſpirable Matter, will beget a Fever equal to that, that the ſuppreſſion of all the reſt begets. And becauſe cutaneous is ten times as much as the Belly Excretions: Therefore the diminution of the tenth part of the perſpirable Matter will beget a Fever equal to that, that the ſuppreſſion of the whole Belly begets. For the ſame cauſes the help of the half, or third part, of Perſpiration, will do as much in puting away a Fever, as the help of all the reſt will do: And the help of the tenth part of Perſpiration will be of as much avail, as the Belly Excretion altogether. And the whole Perſpiration will be of as much avail, as ten Belly Excretions.

XI. The Thing it ſelf cries indeed, ſeing that the Matter of any *Secretion* may be conveighed by any other augmented, and ſince any may by any way be augmented by the exhibition of a profitable Medicine: And laſtly ſince Secretions pro-

proportionally augmented, keep that measure they naturally had: Therefore a greater heap of morbifick Matter, in a certain time, may be brought out by cutaneous Secretion, than by any other whatsomever, in that proportion that the quantity of cutaneous, or skin Secretion, naturally bears to any other Secretion in a natural state. Wherefore a Disease is sooner taken away by Evacuation by the Pores of the skin, than by any other Secretion whatsomever, and that on the foresaid Supposition. From these it follows, that a Disease cannot be so soon put off by making an increase of Stools, as it may be by increasing the cutaneous Secretion, except the increase of the Belly be to the increase of the Cutaneous, in the inverse Reason of Secretions, or as the bulk of the Cutaneous is to the bulk of the Belly in the natural condition. Wherefore the Secretion by the Belly must be a Hundred times more than the Natural, that it may evacuate as much in a Day, as in the like time Perspiration only Ten times more than the Natural evacuats. Or a whole

Man

Man muſt evacuate by the Belly a Hundred times in that time he uſes to ſtool once, and Two Hundred times, or Three Hundred times, who Twice or Thrice: But he who in the ſpace of a Day in Health uſeth to ſtool Ten times, he, when he is Sick, if he would be Cured by Stooling, muſt ſtool a Thouſand times.

XII. From the Premiſſes it follows, that any ſuppoſed Fever (and indeed the ſame will hold in any Diſeaſe ariſing within the Animal) it is Ten times more probable that it will be Cured by Sweating than by Stooling: For ſince the tenth part of Perſpiration is equal to Belly Secretion & as eaſily hapens, or *Perſpiration* made by the 10 part of the Skin; therefore the probability of the Cure by any Perſpiration, is Ten times more than the probability of the Cure by Stools: For it is clear that Stools are only one way, but there are Ten Caſes in which Stools do not happen, *viz.* as many as there are Quantities of Perſpiration equal to Stools: And therefore the expectation of Stools is One to Eleven, and the expectation of the Cutaneous is as Ten to Eleven (ſee the Writings of the Geometritians)

and the expectation of the Cutaneous is Ten times as much as that we expect of the Stools, or the value of the hope of the first, is Ten times the value of the hope of the second. And it becomes the prudent Physician to endeavour these Things that will not deceive his Hope.

XIII. We have already discoursed of Secretions that are augmented by Medicines taken within the Animal, and the ways of the Blood's Circuit. Therefore what is said of Belly Secretions belongs to that, that is done in the Glandules of the Liver Pancreas & Intestines, the increase of which is occasioned by Purgatives, properly so called, or breaking into the Animal beyond the first Ways.

For as to that Belly Excretion that is made by Lenients which frees the first Ways from Filth sticking there, these no more relate to Purging, or Belly Secretion augmented, than washing of the outward Skin is referred to the same. For these Lenients only promove Perspiration of the Intestines like to that of the Skin: For the Pores of the Intestines being opened, there breaks forth

a greater bulk of Perſpiration, than from the like portion of the upper Superfices of the Body, and theſe Pores are opened by Medicines cleanſing Filth, chiefly by fit *Emeticks*.

It's fit here to admoniſh the proportion of Secretion given by *Sanctorius* obtains in found Bodies, in which this moſt deſerving *Phyſician* has examined all the Stools (made up of theſe things which went in to the lacteal Veſſels, and which went not in) But we chiefly diſcourſe of Excrements ſent from the Maſs of Blood by the Canals of the Liver and Pancreas and inteſtinal Glands. For in found Bodies, not uſing Medicines, this Excretion, by ways conveying liquors from the Maſs of Blood, is a very ſmall quantity, and in theſe that are coſtive this is ſcarce obſervable. Wherefore the reſpect that the Cutaneous Secretion has to the Belly, will be much more than Ten to One, or alſo more than a Hundred to One. What may be deduced hence any Body may ſee.

XIV. Let there be Two Elaſtick Canals or Conduits, having Orifices alike upon unequal Diameters, let them receive at every Pulſe quantities of alike Liquor, proportio-

nal to the Orifices. From theſe Things that the Elements teaches it is manifeſt.

Firſt, if the number of the Pulſes in the leſſer Pipe, be more than the number of the Pulſes in the greater, in the inverſt reaſon of the Orifices, the quantities of the Liquors that in the given time flow throw theſe unequal Chanels, will be equal, but the velocity of the Liquid flowing throw the leſſer, will be more than the ſwiftneſs of that flowing by the greater in proportion to the Pulſes.

Secondly, If the number of the Stroaks or Pulſes in the greater be more (that is, if the Times or Vices, in which the greater Canal receives it's Liquor be more in numbet than the Vices that the leſſer receives its liquor) the quantity of the Liquide running throw the greater, in the given time, will be greater than the other in the compound reaſon, according to the proportion that the number of the Pulſes of the greater, bears to the number of the Pulſes of the leſſer, with the reſpect that the Orifice of the greater, has to the Orifice of the leſſer. But the ſwiftneſs of the Liquor flowing throw the

the greater, will be greater in ſwiftneſs than that flowing throw the leſſer, in the above-mentioned proportion of Pulſes.

From which it follows, where the Pulſe is more frequent than the Natural, that is where the number of the ſtroaks is greater, in the reaſon firſt expos'd (as it is in Fevers) the ſwiftneſs of the Liquor going throw the Arteries is greater, although the Pulſe be alſo leſs than the Natural, that is, if the Canal becomes leſs, and is leſs dilated. Moreover if the number of the Pulſes in the greater Canal be greater, that is, if the Pulſe be both more frequent than the Natural, and alſo greater than the Natural, then the quantity of Blood carried through the Arteries in the given time will be much more than the Natural, *viz.* in the compos'd Reaſon declar'd in the ſecond place. This caſe happeneth oft in Fevers, & the Velocity of the Blood muſt be according to the proportion of the Pulſes or of the frequency. Let them ſee who are concerned, what way theſe *Phænomena*'s of the Pulſes may be explain'd by the circuit of the Blood, ſlower than the Natural, & aſcribed to *Fevers* by moe *Medicaſters* than one.

Now

Now by your leave Gentlemen, having ſpoken ſo much of Perſpiration, I will explain and demonſtrat *Bellinus* his Theorem: For none that I know, although it be a moſt pretty one have given the Demonſtration of it. The Theorem is thus.

The whole quantity of Perſpiration coming every Minute from a Shred, whoſe weight is a Scruple, is 1200 part of a *Scrup.* That I will ſhew by the following Method.

Sanctorius declares, that in the ſpace of 24 Hours the Perſpiration is 50 Ounces, which makes 1200 *Scrup.* that is, 50X24 *Scrup.* Therefore we perſpire in the ſpace of an Hour 50 *Scr.* and every Minute of an Hour there is perſpir'd in the whole Body 5 ſix parts of a *Scrup.*

Since then the midle quantity of the weight of the Body of Man is 160*lib.* which are equal to 60000 *Scr.* or 50X1200 there is every Hour expir'd from the whole Body a quantity of Perſpiration, which is 1200 part of the Body: And therefore from every part of the ſame there will expire the 1200 part, or in the ſpace of an Hour there will go out of every *Scrup.* the $\frac{1}{1200}$ of a *Scrup.*

There-

Therefore in that Man whoſe ſum of the Shreds by which Perſpiration is driven is $\frac{1}{60}$ of his whole Body, that is (of a Man of midle weight) 3 *lib.* that ſum will be at leaſt 1000 *Scrup.* Therefore there behoves to ſweat out by thoſe 1000 *Scrup.* every Hour 50 *Scrup:* or by 1 *Scrup.* every Hour $\frac{50}{1000}$ *Scrup.* muſt ſweat out, that is $\frac{1}{20}$ *Scrup.* And therefore in the ſpace of a Minute, or $\frac{1}{60}$ part of an Hour there will ſweat out through 1 *Scrup:* $\frac{1}{60 \times 20}$ or $\frac{1}{1200}$ *Scrup:* as *Bellinus* finds.

And becauſe the weight of Perſpiration, all things being conſidered, is according to the weight of the Body perſpiring. Therefore in a Body of 120 *lib.* or 45000 *Scrup.* the Perſpiration in 24 Hours will be equal to 900 *Scrup:* and Perſpiration every Hour will be equal to the $37\frac{1}{2}$ *Scrup.* Whence every Hour there perſpires 1200 part of the Bo-

Body, and so proportionably of every part and Scruple, because 45000 *Scrup.* make $1200 \times 37\frac{1}{2}$ *Scrup.* Wherefore in that Body in whom the outmost Cuticle of the Uterus, Intestins, Lungs, Jaws, &c. made about 2 *lib.* the sum of all Shreds also by which Perspiration last went throw, was at the least 750 *Scrup.* or the 60 part of her Body. For she died of an immoderat Issue or Emoragy of Blood from the Womb, the third Day after Child-birth, but her Body was 106 *lib.* Now throw these 750 *Scrup.* there behoved every Hour to come out $37\frac{1}{2}$ *Sc.* that is every Hour out of every Scruple to come out $\frac{37\frac{1}{2}}{750}$ *Scrup.* that equals $\frac{1}{20}$ *Scru.* seing $20 \times 37\frac{1}{2}$ equals 750: Therefore every Minute or $\frac{1}{60}$ of an Hour, there will come out throw 1 *Scr.* $\frac{1}{60 \times 20}$ *Scr.* $= \frac{1}{1200}$.

Q. E. D. *i. e.*

Quod Erat Delirandum.

FINIS.